

Missouri Department of Natural Resources

## Total Maximum Daily Load Information Sheet

### Keifer Creek

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#### Water Body Segment at a Glance:

<b>County:</b>	St. Louis
<b>Nearby Cities:</b>	Ballwin
<b>Segment Length:</b>	1.2 miles
<b>Watershed Size:</b>	6.7 square miles
<b>12-Digit Watershed:</b>	071401021001
<b>Pollutants:</b>	Bacteria and Chloride
<b>Source:</b>	Urban runoff/Storm sewers
<b>Water Body ID:</b>	3592



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**Scheduled for TMDL development:** Bacteria in 2013, Chloride in 2017

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#### Description of the Problem

##### Designated beneficial uses of Keifer Creek:

- Livestock and Wildlife Watering
- Protection of Warm Water Aquatic Life
- Protection of Human Health (Fish Consumption)
- Whole Body Contact Recreation – Category A

##### Uses that are impaired:

- Whole Body Contact Recreation – Category A (*E. coli*)
- Protection of Warm Water Aquatic Life (chloride)

##### Standards that apply

The criteria for bacteria are found at 10 CSR 20-7.031(4)(C), where it states that the *E. coli* bacteria count for category A, measured as a geometric mean, shall not exceed 126 colonies per 100 milliliters of water (126 col/100 mL) during the recreational season (April 1- October 31) in waters designated for whole body contact recreation. The *E. coli* count shall not exceed one hundred twenty-six (126) per one hundred milliliters (100 mL) at any time in losing streams.

Numeric criteria for chloride are found in 10 CSR 20-7.031 Table A and are dependent upon water hardness and sulfate concentrations. However, the assessment of Keifer Creek as impaired by chloride predates this current criteria, and is based on the state's former chronic chloride criterion of 230 milligrams per liter (mg/L). An assessment based on the new hardness dependent criteria has not yet been completed.

## **Background information and water quality data**

Keifer Creek is a small stream in St. Louis County that flows in a southeast direction and empties into the Meramec River near St. Louis. It is designated for Category A whole body contact recreation use, which applies to water bodies with designated swimming areas and waters with existing whole body contact recreational uses. The impairment is based on data gathered by the U.S. Geological Survey and the Metropolitan St. Louis Sewer District.

Excessive amounts of fecal bacteria in surface water used for recreation are an indication of an increased risk of pathogen-induced illness to humans. Infections due to pathogen-contaminated waters include gastrointestinal, respiratory, eye, ear, nose, throat and skin diseases. *E. coli* are bacteria found in the intestines of warm-blooded animals and are used as indicators of the risk of waterborne disease from pathogenic (disease causing) bacteria or viruses. Most *E. coli* strains are harmless, but some can cause serious illness in humans and are occasionally responsible for product recalls. Missouri's whole body contact bacteria criteria are based on specific levels of risk of acute gastrointestinal illness. The level of risk correlating to the category A criterion is no more than 8 illnesses per 1,000 swimmers in fresh water (0.8 percent).

A stream is judged as impaired by bacteria if the water quality criterion is exceeded in any of the last three years for which there is adequate data (minimum of five samples taken during the recreational season). Adequate data was collected in 2007, 2008, and 2009. The 2009 data shows an exceedance of the 206 col/100 mL criterion (Figure 1). Therefore, Keifer Creek was judged to be impaired by bacteria and was listed on the 2012 303(d) List of impaired waters.

Additionally, much of Keifer Creek is a losing stream. Missouri's Water Quality Standards state that for losing streams, the *E. coli* count shall not exceed 126 col/100 mL at any time. The department's 2012 303(d) listing methodology does not have a specific method to evaluate this "not to be exceeded" criteria. Despite this, the department has recently evaluated compliance with this criterion using the established ten-percent rule used to evaluate other not-to-be-exceeded criteria such as pH, dissolved oxygen, and temperature. If 10 percent of the observed data exceeds the criterion, then the water body is judged to be impaired. Following this assessment method, the department found that 31 percent of the *E. coli* measurements do exceed this 126 col/100 mL criterion.

The Listing Methodology stipulates that only one exceedance of the chloride criteria in the last three years of available data is necessary to constitute an impairment. The USGS data contains 5 samples where the chronic standard of 230 mg/L is exceeded in Keifer Creek in that timeframe. (Figure 2).

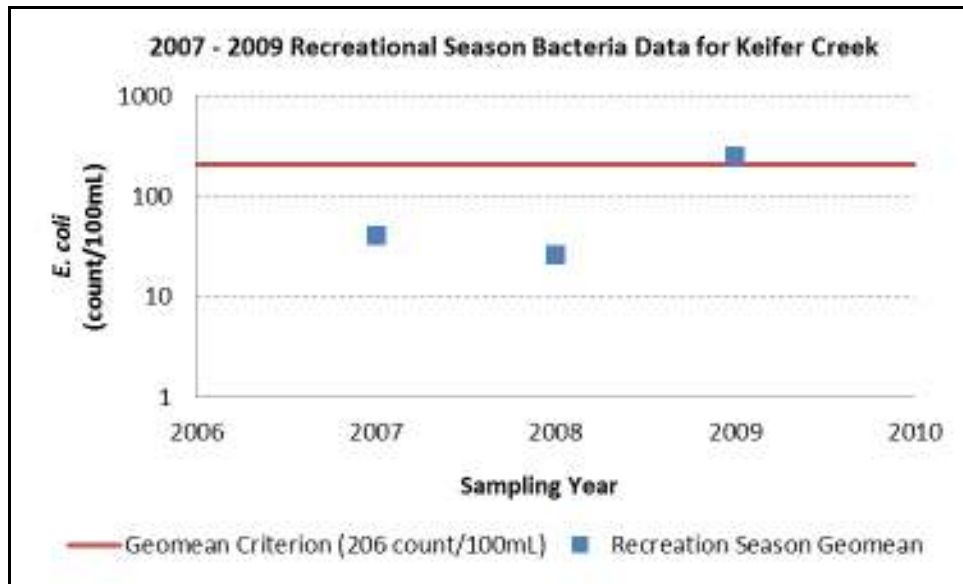


Figure 1.

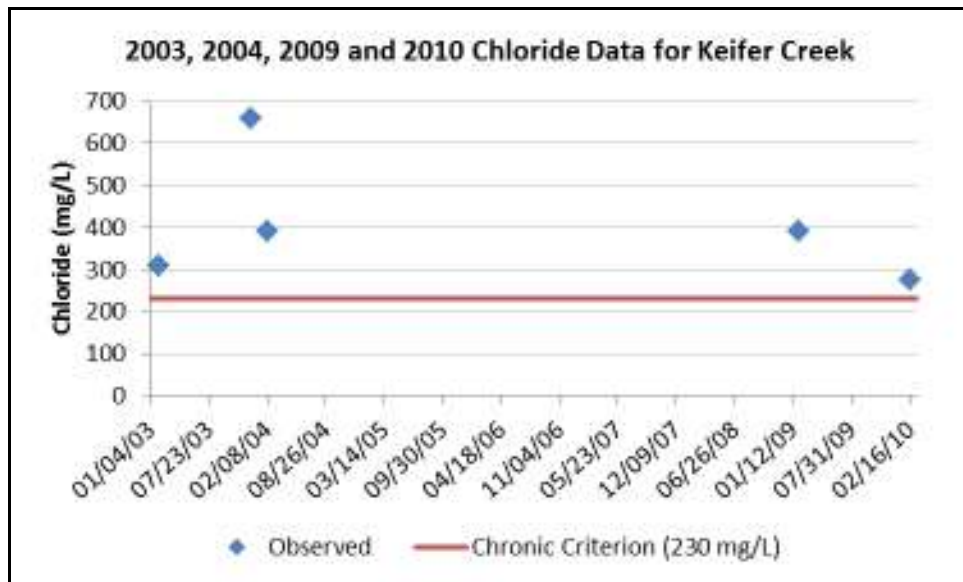
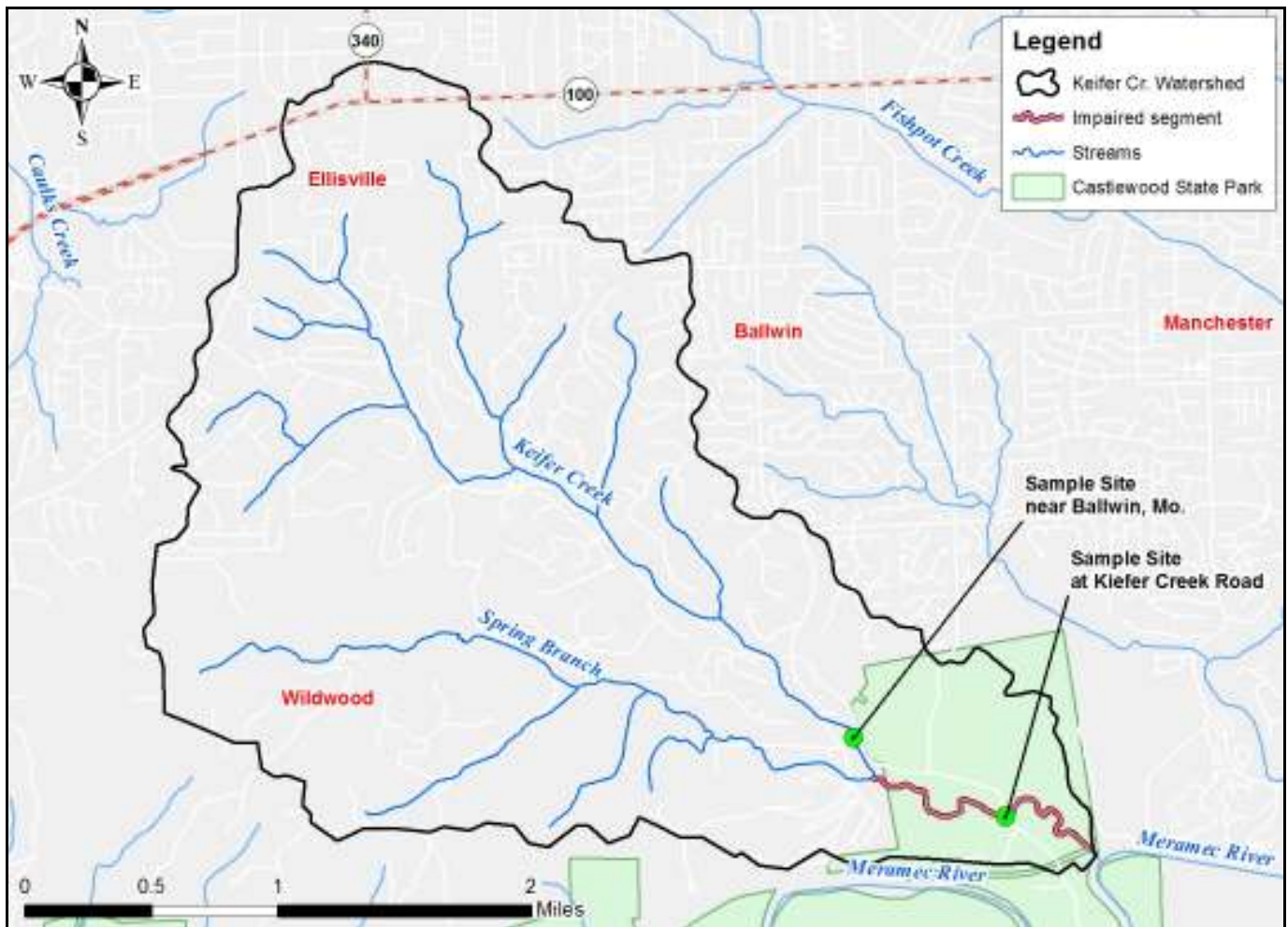


Figure 2.

## Map Showing the Keifer Creek Watershed in St. Louis County and Sample Sites



**NOTE:** The final Keifer Creek TMDL will be developed using the most current, available data.

**For more information call or write:**

Missouri Department of Natural Resources  
Water Protection Program

P.O. Box 176, Jefferson City, MO 65102-0176

1-800-361-4827 or 573-751-1300 office

573-526-4901 fax

Program Home Page: [dnr.mo.gov/env/wpp/index.html](http://dnr.mo.gov/env/wpp/index.html)